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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,430	04/25/2005	Kenji Yamane	OGW-0365	1792
7590	06/01/2007			
Patrick G. Burns Greer, Burns & Crain, Ltd. Suite 2500 300 South Wacker Drive Chicago, IL 60606			EXAMINER MAKI, STEVEN D	
			ART UNIT 1733	PAPER NUMBER
			MAIL DATE 06/01/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/532,430	Applicant(s) YAMANE, KENJI	
	Examiner Steven D. Maki	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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- 1) The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- 2) Claims 1, 3 and 4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, the subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention (i.e. the new matter) is the subject matter of the ridges or recesses being inclined "from approximately 10° to 60° with respect to a groove longitudinal direction, along a plane substantially parallel to the tread surface". The original disclosure teaches inclining the ridges or recesses at an angle alpha as shown in figures 2-4 wherein angle alpha is 10-60 degrees. In particular, the ridges or recesses 4 are inclined along the face 3 of the groove 2. As can be seen from figure 4, the ridge 4 is not parallel to the tread surface. The original disclosure teaches angle alpha as being 10-60 degrees instead of "approximately 10 to 60 degrees". The original disclosure fails to teach broadening the angle range of 10-60 degrees using the term "approximately". The original disclosure fails to teach modifying the angle range of 10-60 degrees using terms "approximately" and "substantially". The original disclosure fails to teach inclining the ridges or recesses

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along a "plane substantially parallel to the tread surface" instead of along the face 3 of the groove 2.

- 3) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 4) Claims 1, 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, there is no clear antecedent basis for "the longitudinal grooves". In claim 1 line 13, it is suggested to change "the longitudinal grooves" (both occurrences) to --the circumferential grooves--.

- 5) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 6) **Claims 1, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinen (US 6,415,835) in view of Tomioka et al (US 5,211,779) or Williams (US 4,299,264)**

Heinen discloses a pneumatic tire having a tread comprising a circumferential groove wherein both side surfaces of the groove are provided with peaks and valleys such that each valley extends continuously from one side surface to the other side surface. At least half the valleys follow imaginary lines skewed with respect to the median plane extending along the length of the groove by an angle of 45-90 degrees.

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The depth D1 of the peaks and valleys is 5-15% of the groove width. Preferably, the depth D1 is less than 3 mm. The pitch P1 of the peaks and valleys is less than 40% of the groove width. Preferably, the pitch P1 will be less than 5 mm.

As to claim 1, it would have been obvious to one of ordinary skill in the art to use Heinen's peaks and valleys in a tread having circumferential grooves and lateral grooves extending away from the tread surface circumferential center (tire equator) wherein the distal ends of the lateral grooves are open in view of (1) Heinen's teaching to use the peaks and valleys in a groove, which may extend circumferentially or laterally, to decrease friction drag and thereby increase flow of water from the groove (col. 2 lines 66-67, col. 3 lines 1-25, 47-52, col. 4 lines 52-60) and (2) it is well known in the tire tread art to form a tire tread with circumferential grooves and lateral grooves having open distal ends to improve water drainage as evidenced by Tomioka et al (figure 2, figure 3) or Williams (figure 2, figure 5). Thus, Tomioka et al or Williams motivate one of ordinary skill in the art to use such lateral grooves in Heinen's tread in order to improve drainage of water from the tread.

Heinen teaches an angle of 45-90 degrees overlapping the claimed range of 10 to 60 degrees. In any event: it would have been obvious to orient the peaks and valleys ("line portions") in Heinen's circumferential groove such that the peaks and ridges are "inclined from approximately 10° to 60° with respect to a groove longitudinal direction, along a plane substantially parallel to the tread surface" since Heinen suggests inclining the valleys at an angle of 45-90 degrees with respect to the median plane extending in

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the longitudinal direction to reduce skin friction drag along the groove surface and increase the flow of water from the groove.

With respect to "wherein the line portions are provided in a range of not less than 50% of the wall face of the longitudinal grooves in a cross section of the longitudinal grooves orthogonal to the groove longitudinal direction", Heinen discloses 100% of the wall face of the groove being provided with the grooves and valleys. See figure 7.

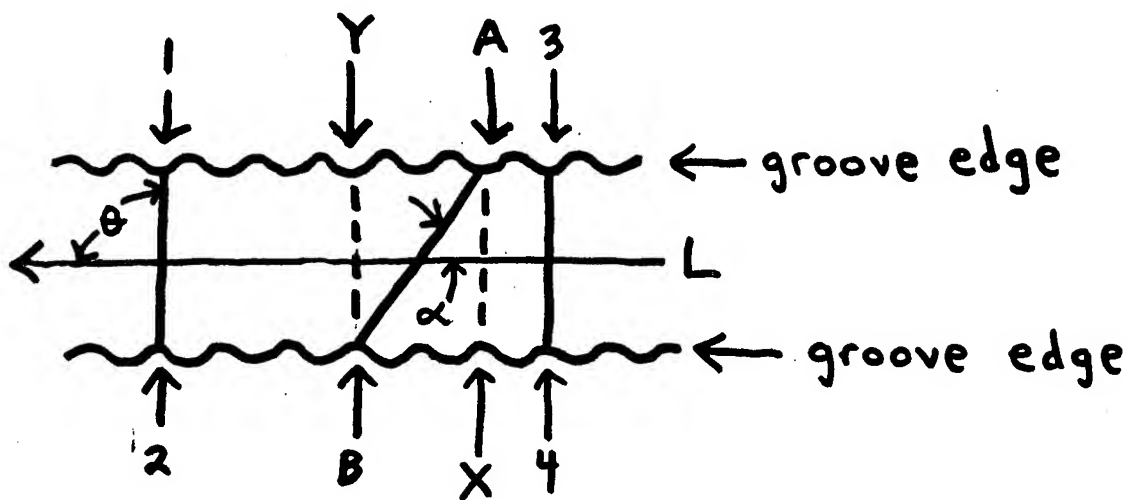
As to claim 3, it would have been obvious to one of ordinary skill in the art to provide the peaks and valleys with a height of not smaller than 0.3 mm and not more than 20% of each of a width and depth of the groove in view of Heinen's teaching to provide the peaks and valleys with a depth D1 of 5-15% of the groove width / less than 3 mm and a pitch P1 less than 40% of the groove width / less than 5 mm.

As to claim 4, Heinen teaches a pitch P1 of less than 5 mm which overlaps the claimed range of 1.5 to 8.0 mm.

Remarks

7) Applicant's arguments filed 4-30-07 have been fully considered but they are not persuasive.

Applicant argues that Heinen's peaks and valleys are necessarily at 90° with respect to the longitudinal direction of the groove along a plane parallel to the tread surface because the peaks and valleys are 180° out of phase. This argument is not persuasive. Attention is directed to the following figure:



The undulating lines in the above figure represent the edges of a groove at the tread surface. The peaks and valleys at one groove edge are 180 degrees out of phase from the peaks and valleys at the other groove edge. For example, peak 1 is directly opposite peak 2. Another example, peak 3 is directly across from peak 4. A continuous peak can extend from peak 1 to peak 2 along a line inclined at angle θ with respect to the line L (the longitudinal direction of the groove) wherein angle θ is 90 degrees. However, a continuous peak can extend from peak A to peak B along a line inclined at angle α with respect to line L (the longitudinal direction of the groove). This is true even though peak A is directly across from peak X and peak B is directly across from peak Y. The path of a continuous peak from one groove edge to the other groove edge is independent of the phase of the peaks at the tread surface. More importantly, Heinen fails to require peaks and valleys on one side surface to be 180 degrees out of phase from the peaks on the other side surface. Heinen merely prefers to peaks and valleys

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on one side surface to be 180 degrees out of phase from the peaks on the other side surface.

Applicant argues that the skewing described in Heinen creates an angle of 45 to 90 degrees with respect to the longitudinal direction of the groove, but in a plane which is perpendicular to the tread surface and not parallel as in the present invention. In response, the examiner makes the following comments: In Heinen, the longitudinal direction of groove corresponds to the imaginary line or arc located on the median plane within the depth of the groove wherein the median plane bisects the channel formed by the respective surfaces of the groove. See col. 5 lines 59-67. Heinen teaches that the peaks and valleys follow imaginary lines that are skewed with respect to the median plane line or arc at 45 to 90 degrees. See col. 6 lines 1-4. Heinen teaches that the lines are skewed at 90 degrees in the preferred embodiment, which is illustrated in figure 7. See figure 7, col. 4 lines 28-29, col. 6 lines 4-7. With respect to this skewing at an angle of 45-90 degrees, Heinen explains:

This angle measured by transposing each line or arc into the same plane and measuring the angle at the intersection of the respective lines.

See col. 6 lines 7-9 (emphasis added). When applicant created figure 3 of the original disclosure, applicant transposed the line followed by the ridges or peaks 4 into the same plane (the tread surface) in order to measure angle alpha. It is the examiner's opinion that the "along a plane substantially parallel to the tread surface language" in amended claim 1 is an attempt to describe this transposing concept, which is illustrated in applicants figure 3 and described by Heinen in col. 6 lines 7-9. In view of Heinen's teaching of how to measure the angle of the skewed line and with proper understanding

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of the terminology "180 degrees out of phase", it is readily apparent why applicant's drawing on page 8 of the response filed 4-30-07 is incorrect. First, the illustration of 180 degrees in the drawing on page 8 of the response filed 4-30-07 fails to indicate "180 degrees out of phase" because the line formed by the angle of 180 degrees is in the amplitude direction instead of the wavelength direction. Second: The peaks and valleys in Heinen's groove follow a three dimensional path (e.g. V-shaped path in the preferred embodiment of figure 7) instead of a straight line as illustrated in the drawing on page 8 of the response filed 4-30-07. Third: In the drawing on page 8 of the response filed 4-30-07, the illustrated line in the plane perpendicular to the tread surface corresponds to a single point instead of a line in a plane transposed from the imaginary line or arc followed by the peaks, valleys. Contrary to applicant's arguments, Heinen's angle of 45-90 degrees at which the peaks and valleys may be skewed directly corresponds to the angle α indicated in figure 3. It is acknowledged again that Heinen prefers skewing at 90 degrees. This preferred embodiment is illustrated in figure 7. However, Heinen expressly teaches that the imaginary lines followed by the peaks and valleys may be skewed at an angle of 45 degrees to 90 degrees with respect to the median plane line or arc.

Applicant comments that the lateral grooves extend in the tire width direction, intermittently in the tire circumferential direction, from the grooves away from the center of the tread surface wherein the lateral grooves are open at the edges of the shoulders (the distal ends of the lateral grooves). More properly, Tomioka et al or Williams

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motivate one of ordinary skill in the art to use such lateral grooves in Heinen's tread in order to improve drainage of water from the tread.

Applicant argues that the line portions of the present invention are oriented to encourage a spiral flow in water progressing within the groove, moving toward a center position in a cross section of the water flow path in the groove space. Applicant concludes the claimed invention better prevents hydroplaning over Heinen. This "unexpected results" argument is not persuasive because (1) the claimed invention has not been compared to Heinen, which teaches that the peaks and valleys increase the amount of water ejected from the groove to increase wet traction and (2) Tomioka / Williams suggest using lateral grooves to improve water drainage from a tire tread. No unexpected results over the applied prior art has been shown.

8) No claim is allowed.

9) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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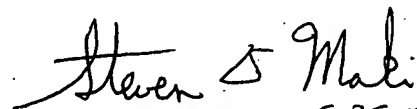
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven D. Maki
May 25, 2007


STEVEN D. MAKI 5-25-07
PRIMARY EXAMINER